Central Mail

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JOHN E. DOLAN
Senior Executive Vice President
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December 7, 1977

Donald C. Cook Nuclear Plant Unit 1
Docket No. 50-315
DPR-58

Mr. J. G. Keppler, Regional Director
U.S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60317

Dear Mr. Keppler:

Attachment A to this letter contains the response to your letter of November 23, 1977, which transmitted to us IE Bulletin No. 77-06 entitled, "Potential Problems With Containment Electrical Penetration Assemblies." You requested that we respond both orally and in written form. Our oral response was given to Mr. R.F. Warnick of Region III on November 25, 1977, this letter transmits our written response.

Very truly yours,

John E. Dolan

John E. Dolan
Senior Executive Vice President
Engineering

JED:mg

cc: See next page

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cc: R.C. Callen
P.W. Steketee
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1.0 The containment electrical penetrations used at D.C. Cook Nuclear Plant Units 1 and 2 are not manufactured by General Electric and do not employ an epoxy sealant to ensure adequate functioning of electrical safety related equipment or to ensure containment leak tightness.

1.1 There have been no penetration failures, either electrically or concerning containment leak tightness since installation was completed. Minor mechanical damage to electrical wires external to the penetration was detected and repaired using procedures approved by the penetration supplier prior to operation of the installed penetration.

Answer to additional question received from Region III on November 25, 1977.
The electrical conductors in the electrical penetrations used at the D.C. Cook Plant do not employ epoxy for electrical insulation or for leak tightness. There is no embedment of the conductors in epoxy.

2.0 The penetrations were shipped and stored with dry nitrogen under pressure. During a short period during installation, the penetrations were depressurized to permit installation in the containment sleeve and again when the pressurization connections were being made. The penetrations are maintained at approximately 15 psig pressure of dry air after installation.

2.1 The electrical penetrations are operated under pressure with dry air. No anomalous component operation or any degradation of insulation has been detected which could be related to electrical containment penetrations.

2.2 The electrical penetrations have been operated under dry air pressure since installation.

2.3 All major electrical equipment such as motors and transformers and their connecting cables including penetrations are periodically tested for insulation resistance to ground.

On a continuous basis the following ground detection methods are employed:

A. 4kv Power Circuits.

The power source is grounded through a resistor which limits ground fault current to a maximum value of 2000 amps. The ground fault detectors of the circuit breakers will initiate a trip when the ground fault current exceeds 40 amps.

B. 600 volt and 480 volt Power Circuits.
The 600 volt and 480 volt power buses are operated with no intentional grounds. If a ground fault occurs, the fault current is limited to a value determined by the capacitance of the system, and is limited to less than one ampere. Ground fault detecting relays are provided on each of the buses which detect grounds anywhere on the system, including the electrical penetrations, and operate an annunciator in the unit control room.

C. 250 volt Battery System.
The battery systems are operated with no intentional ground. Ground detector relays are provided on each battery bus which detect grounds anywhere on the battery system, including the penetrations, and operate an annunciator in the control room.

3.0 There is no need to maintain pressure in the electrical penetrations during a design basis accident. Each penetration is provided with 2 seals in series, each of which is capable of withstanding pressures greater than those generated during a design basis accident, without leaking.

The penetrations were pressurized with dry nitrogen at 15 psig during environmental qualification tests. The penetration was required to pass a leak rate test of less than 1×10^{-6} cc per second of helium at 20 psig pressure differential following the environmental qualification test.

3.1 The containment electrical penetrations are qualified for all analyed accident environmental conditions. The penetrations were qualified for these conditions by tests.

3.2 The measures taken that provide assurance of qualification of the penetrations are adequate to satisfy the commission regulations as identified in the question.